(c) If a proposed transfer of radio facilities is incidental to a sale or other facilities or merger of interests, any showing requested under paragraph (a) of this section must include an additional exhibit that:

(1) Discloses complete details as to the sale of facilities or merger of interests;

(2) Segregates clearly by an itemized accounting, the amount of consideration involved in the sale of facilities or merger of interests; and

(3) Demonstrates that the amount of consideration assignable to the facilities or business interests involved represents their fair market value at the time of the transaction.

(d) For the purposes of this section, the one year period is calculated using the following dates (as appropriate):

(1) The initial date of grant of the license, excluding subsequent modifications;

(2) The date of consummation of an assignment or transfer, if the station is acquired as the result of an assignment of license, or transfer of control of corporate licensee; or

(3) The median date of the applicable commencement dates (determined pursuant to paragraphs (d)(1) and (2) of this section) if the transaction involves a system (such as a ~~Private Operational Fixed~~ Point-to-Point Microwave ~~System)~~ system) of two or more stations. (The median date is that date so selected such that fifty percent of the commencement dates of the total number of stations, when arranged in chronological order, lie below it and fifty percent lie above it. When the number of stations is an even number, the median date will be a value half way between the two dates closest to the theoretical median).

§101.57 Modification of station license.

NO CHANGE.

§101.59 Processing of applications for facility minor modifications.

(a) Unless an applicant is notified to the contrary by the Commission, as of the twenty-first day following the date of public notice, any application that meets the requirements of paragraph (b) of this section and proposes only the change specified in paragraph (c) of this section will be deemed to have been authorized by the Commission.

(b) An application may be considered under the procedures of this section only if:

(1) It is in the ~~Point-to-Point Microwave Radio, Private Operational Fixed Point-to-Point Microwave, Common Carrier Fixed Point-to-Point Microwave,~~ Local Television Transmission, or Digital Electronic Message ~~Service;~~ Services;

(2) The cumulative effect of all such applications made within any 60 ~~days~~ day period does not exceed the appropriate values prescribed by paragraph (c) of this section;

(3) The facilities to be modified are not located within 56.3 kilometers (35 miles) of the Canadian or Mexican border;

(4) It is acceptable for filing, is consistent with all of the Commission's rules, and does not involve a waiver request;

(5) It specifically requests consideration pursuant to this section; and

(6) ~~Frequency coordination procedures, as necessary, are complied with~~ Written notice of such filing has been provided to all parties otherwise required to be provided a prior coordination notice in accordance with §101.103(d) or, in the Digital Electronic Message Services, a copy of the application has been served on those who also were served under §101.509.

(c) The modifications that may be authorized under the procedures of this section are:

(1) Changes in a transmitter and existing transmitter operating characteristics, or protective configuration of transmitter, provided that:

(i) In all radio services other than Digital Electronic Message Service, any increase in transmitter output power is less than ~~three~~ 3 dB over the previously authorized output power, and in Digital Electronic Message Service, any increase in transmitter output power is ~~one-and-one-half~~ 1.5 dB or less over the previously authorized output power;

(ii) The necessary bandwidth is not increased beyond the previously authorized bandwidth;

(2) Changes in the center line height of an antenna, provided that:

(i) In all radio services except the Digital Electronic Message Service, any increase in antenna height is less than ~~6.1~~ 3.0 meters ~~(20~~ (10 feet) above the previously authorized height;

(ii) In the Digital Electronic Message Service, any increase in antenna height is less than 3.0 meters (10 feet) above the previously authorized height; and

(iii) The overall height of the antenna structure is not increased as a result of the antenna extending above the height of the previously authorized structure, except when the new height of the antenna structure is 6.1 meters (20 feet) or less (above ground or man-made structure, as appropriate) after the change is made.

(3) Change in the geographical coordinates of a transmit station, receive station or passive facility by five (5) seconds or less of latitude, longitude or both, provided that when notice to the FAA of proposed construction is required by Part 17 of the rules for antenna structure at the previously authorized coordinates (or will be required at the new location) the applicant must comply with the provisions of §101.21(a).

(d) Upon grant of an application under the procedure of this section and at such time that construction begins, the applicant must keep a complete copy of the application (including the filing date) with the station license if construction begins prior to receipt of the authorization.

§101.61 Certain modifications not requiring prior authorization.

(a) Equipment in an authorized radio station may be replaced without prior authorization or notification if the replacement equipment is equivalent to the replaced equipment.

(b) Licensees of fixed stations in the ~~Point-to-Point Microwave Radio, Private~~ Operational Fixed Point-to-Point Microwave, Common Carrier Fixed Point-to-Point Microwave, Local Television Transmission, or Digital Electronic Message Services, may make the facility changes listed in paragraph (c) of this section without obtaining prior Commission authorization, if:

(1) Frequency coordination procedures, as necessary, are complied with in accordance with §101.103(d) or, in the Digital Electronic Message Services, a copy of the notification described in (b)(3) is served on those who were served under §101.509, and

(2) The cumulative effect of all facility changes made within any 60 day period does not exceed the appropriate values prescribed by paragraph (c) of this section, and

(3) The Commission is notified of changes made to facilities by the submission of a completed FCC Form ~~494~~ [redacted] within thirty days after the changes are made.

(c) Modifications that may be made without prior authorization under paragraph (b) of this section are:

(1) Change or modification of a transmitter, when:

(i) The replacement or modified transmitter is type-accepted (or type-notified) for use under this Part and is installed without modification from the type-accepted (or type notified) configuration;

(ii) The type of modulation is not changed;

(iii) The frequency stability is equal to or better than the previously authorized frequency stability; and

(iv) The necessary bandwidth and the output power do not exceed the previously authorized values.

(2) Addition or deletion of a transmitter for protection without changing the authorized power output (e.g. hot standby transmitters);

(3) Change to an antenna (other than any change involving a periscope antenna system), when:

(i) For the ~~Point-to-Point Microwave Radio~~ Private Operational Fixed Point-to-Point Microwave, Common Carrier Fixed Point-to-Point Microwave, and Local Television Transmission Services, the new antenna conforms to the requirements of §101.115 and has essentially the same or better radiation characteristics than the previously authorized antenna;

(ii) For the Digital Electronic Message Service, the new antenna conforms with §101.517 and the gain of the new antenna does not exceed that of the previously authorized antenna by more than one dB in any direction.

(4) Any technical changes that would decrease the effective radiated power.

(5) Change to the height of an antenna system, when:

(i) The new center line height ~~(measured at the center of radiation)~~ is within +/-1.5 meters (5 feet) of the previously authorized height; and

(ii) The overall height of the antenna structure is not increased as a result of the antenna extending above the height of the previously authorized structure, except when the new height of the antenna structure is 6.1 meters (20 feet) or less (above ground or man-made structure, as appropriate) after the change is made.

(6) Decreases in the overall height of an antenna structure, provided that, when notice to the FAA of proposed construction was required by Part 17 of the Rules for the antenna structure at the previously authorized height, the applicant must comply with the provisions of §101.21(a).

(7) Changes in the azimuth of the center of the main lobe of radiation of a point-to-point station's antenna by a maximum of one degree.

(8) Changes to the transmission line and other devices between the transmitter and the antenna when the effective radiated power of the station is not increased by more than one dB.

(d) Licensees may notify the Commission of permissible changes or correct erroneous information on a license not involving a major change (i.e., a change that would be classified as a major amendment as defined by §101.29) without obtaining prior Commission approval by filing FCC Form 494.

§101.63 Period of construction; certification of completion of construction.

(a) ~~Except as provided in paragraphs (b) and (f) of this section, each~~ Each station authorized under this part must be in operation within ~~12~~ 18 months from the initial date of grant. Modification of an operational station must be completed within ~~12~~ 18 months of the date of grant of the applicable modification request.

(b) ~~Each station licensed on point-to-multipoint frequencies in the 10.6 GHz and 18 GHz bands must be in operation within 18 months of the initial date of grant. Modification of an operational station must be completed within 18 months of the initial date of grant of the applicable modification request.~~ ~~(c)~~ Failure to timely begin operation means the authorization cancels automatically and must be returned to the Commission. Neither the capability for transmission nor the transmission of color bars or similar test signals constitutes operation. For purposes of this rule, the transmission of operational traffic, not test or maintenance signals, is necessary and sufficient to constitute operation.

~~(d)~~ (c) The frequencies associated with all point-to-multipoint authorizations which have cancelled automatically or otherwise been recovered by the Commission will again be made available for reassignment on a date and under terms set forth by Public Notice.

~~(e)~~ (d) Requests for extension of time to be in operation may be granted upon a showing of good cause, setting forth in detail the applicant's reasons for failure to have the facility operating in the prescribed period. Such requests must be submitted no later than 30 days prior to the end of the prescribed period to the Federal Communications Commission, Gettysburg, PA 17325-7245.

~~(f)~~ (e) Construction of ~~Common Carrier stations may not commence until the grant of a license, and~~ any station must be completed by the date specified in the license as the termination date of the construction period. Each licensee must file with the Commission a certification of completion of construction using FCC Form ~~494A,~~ [redacted], certifying that the facilities as authorized have been completed and that the station is now operational and ready to provide service to the public, and will remain operational during the license period, unless the license is submitted for cancellation.

§101.65 Forfeiture and termination of station authorization.

(a) A ~~common carrier~~ license will be automatically forfeited in whole or in part without further notice to the licensee upon:

(1) The expiration of the construction period specified therein, or after such additional time as may be authorized by the Commission, unless within 5 days after construction period date a certification of completion of construction has been filed with the Commission pursuant to §101.63; or

(2) The expiration of the license period specified therein, unless prior thereto an application for renewal of such license has been filed with the Commission; or

(3) The voluntary removal or alteration of the facilities, so as to render the station not operational for a period of 30 days or more.

(b) A license forfeited in whole or in part under the provisions of paragraph (a)(1) or (a)(2) may be reinstated if the Commission, in its discretion, determines that reinstatement would best serve the public interest, convenience and necessity. Petitions for reinstatement filed pursuant to this subsection will be considered only if:

(1) The petition is filed within 30 days of the expiration date set forth in paragraph (a)(1) or (a)(2) of this section, whichever is applicable;

(2) The petition explains the failure to timely file such notification or application as would have prevented automatic forfeiture; and

(3) The petition sets forth with specificity the procedures which have been established to insure timely filings in the future.

(c) A special temporary authorization will automatically terminate upon the expiration date specified therein, or upon failure to comply with any special terms or conditions set forth therein. Operation may be extended beyond such termination date only after application and upon specific authorization by the Commission.

(d) If a station licensed under this part discontinues operation on a permanent basis, the licensee must forward the station license to the Federal Communications Commission, Gettysburg, Pennsylvania 17325, for cancellation. For purposes of this section, any station which has not operated for one year or more is considered to have been permanently discontinued. See Section 101.305 for additional rules regarding temporary and permanent discontinuation of service.

§101.67 License period.

NO CHANGE.

§101.69 Transition of the 2.11-2.13, and 2.16-2.18 GHz bands from the Common Carrier Point-to-Point Fixed Microwave Services and the 1.85-1.99, 2.13-2.15, and 2.18-2.20 GHz bands from the Private Operational Fixed Point-to-Point Microwave Service to emerging technologies.

(a) Licensees proposing to implement services using emerging technologies (ET Licensees) may negotiate with Common Carrier and Private Operational Fixed Point-to-

Point Microwave Service licensees (Existing Licensees) in these bands for the purpose of agreeing to terms under which the Existing Licensees would relocate their operations to other fixed microwave bands or to other media, or alternatively, would accept a sharing arrangement with the ET Licensee that may result in an otherwise impermissible level of interference to the existing licensee's operations. ET Licensees may also negotiate agreements for relocation of the Existing Licensees' facilities within the 2 GHz band in which all interested parties agree to the relocation of the Existing Licensee's facilities elsewhere within these bands. "All interested parties" includes the incumbent licensee, the emerging technology provider or representative requesting and paying for the relocation, and any emerging technology licensee of the spectrum to which the incumbent's facilities are to be relocated.

(b) Common Carrier and Private Operational Fixed Point-to-Point Microwave Service licensees, with the exception of public safety facilities defined in paragraph (f) of this section, in bands allocated for licensed emerging technology services will maintain primary status in these bands until two years after the Commission commences acceptance of applications for an emerging technology ~~services~~ service (two-year voluntary negotiation period), and until one year after an emerging technology service licensee initiates negotiations for relocation of the fixed microwave licensee's operations (one-year mandatory negotiation period) or, in bands allocated for unlicensed emerging technology services, until one year after an emerging technology unlicensed equipment supplier or representative initiates negotiations for relocation of the fixed microwave licensee's operations (one-year mandatory negotiation period). When it is necessary for an emerging technology provider or representative of unlicensed device manufacturers to negotiate with a fixed microwave licensee with operations in spectrum adjacent to that of the emerging technology provider, the transition schedule of the entity requesting the move will apply. Public safety facilities defined in paragraph (f) of this section will maintain primary status in these bands until ~~four~~ three years after the Commission commences acceptance of applications for an emerging technology service (~~four~~ three-year voluntary negotiation period), and until ~~one~~ two years after an emerging technology service licensee or an emerging technology unlicensed equipment supplier or representative initiates negotiations for relocation of the fixed microwave licensee's operations (~~one~~two-year mandatory negotiation period).

(c) The Commission will amend the operation license of the ~~fixed microwave~~ Common Carrier and Private Operational Fixed Point-to-Point Microwave Service operator to secondary status only if the following requirements are met:

(1) The service applicant, provider, licensee, or representative using an emerging technology guarantees payment of all relocation costs, including all engineering, equipment, site and FCC fees, as well as any reasonable, additional costs that the relocated fixed microwave licensee might incur as a result of operation in another fixed microwave band or migration to another medium;

(2) The emerging technology service entity completes all activities necessary for implementing the replacement facilities, including engineering and cost analysis of the relocation procedure and, if radio facilities are used, identifying and obtaining, on the incumbents' behalf, new microwave frequencies and frequency coordination; and

(3) The emerging technology service entity builds the replacement system and tests it for comparability with the existing 2 GHz system.

(d) The 2 GHz microwave licensee is not required to relocate until the alternative facilities are available to it for a reasonable time to make adjustments, determine comparability, and ensure a seamless handoff.

(e) If within one year after the relocation to new facilities the 2 GHz microwave licensee demonstrates that the new facilities are not comparable to the former facilities, the emerging technology service entity must remedy the defects or pay to relocate the microwave licensee back to its former or equivalent 2 GHz frequencies.

(f) Public safety facilities subject to the ~~four-year~~ three-year voluntary and ~~one-year~~ two-year mandatory negotiation periods, are those that the majority of communications carried are used for police, fire, or emergency medical services operations involving safety of life and property. The facilities within this exception are those facilities currently licensed on a primary basis pursuant to the eligibility requirements of §90.19, Police Radio Service; §90.21, Fire Radio Service; §90.27 Emergency Medical Radio Service; and Subpart C of Part 90, Special Emergency Radio Services. Licensees of other Part 101 facilities licensed on a primary basis under the eligibility requirements of Part 90, Subparts B and C, are permitted to request similar treatment upon demonstrating that the majority of the communications carried on those facilities are used for operations involving safety of life and property.

Subpart C - Technical Standards

§101.101 Frequency availability.

FREQUENCY BAND (MHz)	RADIO SERVICE				
	COMMON CARRIER (Part 101)	PRIVATE RADIO (Part 101)	BROADCAST AUXILIARY (Part 74)	OTHER (Parts 15, 21, 24 ~~25~~, 74, 78 & ~~100~~)	NOTES
928 - 929		MAS			
932.0 - 932.5	MAS	MAS			*
932.5 - 935.0	~~CC PPMS~~	OFS			*
941.0 - 941.5		MAS			*
941.5 - 944.0	~~CC PPMS~~	OFS	Aural BAS		*
952 - 960		OFS/MAS			
1850 - 1990		OFS		PCS	
2110 - 2130	~~CC PPMS~~			~~FT~~	
2130 - 2150		OFS		~~FT~~	
2150 - 2160		OFS		MDS	
2160 - 2180	~~CC PPMS~~			~~FT~~	
2180 - 2200		OFS		~~FT~~	
2450 - 2500		OFS	TV BAS	~~ISM~~	F/M/TF
2650 - 2690		OFS		MDS/ITFS	
3700 - 4200	~~CC PPMS~~, LTTS	OFS		~~SAT~~	
5925 - 6425	~~CC PPMS~~, LTTS	OFS		~~SAT~~	
6425 - 6525	LTTS	OFS	TV BAS	CARS	M
6525 - 6875	~~CC PPMS~~	OFS			F/TF
10,550 - 10,680	~~CC PPMS~~, DEMS	OFS, ~~DEMS DTS~~			
10,700 - 11,700	~~CC PPMS~~	OFS		~~SAT~~	
11,700 - 12,200	LTTS	OFS		~~SAT~~	
12,200 - 12,700		OFS		~~DBS~~	
12,700 - ~~13,200 13,250~~	~~CC, LTTS PPMS~~	OFS	TV BAS	CARS	F/M/TF

FREQUENCY BAND (MHz)	RADIO SERVICE				
	COMMON CARRIER (Part 101)	PRIVATE RADIO (Part 101)	BROADCAST AUXILIARY (Part 74)	OTHER (Parts 15, 21, 24 25, 74, 78 & 100)	NOTES
14,200 - 14,400	LTTS			SAT	
17,700 - 18,580	CC ~~PPMS~~	OFS	TV BAS	SAT CARS	
18,580 - 18,820	CC ~~PPMS~~	OFS	Aural BAS	SAT ~~CARS~~	
18,820 - 18,920	DEMS	OFS		SAT	
18,920 - 19,160	CC	OFS	Aural BAS	SAT	
19,160 - 19,260	DEMS	OFS		SAT	
19,260 - 19,700	CC ~~PPMS~~	OFS	TV BAS	CARS, SAT	
21,200 - 23,600	CC ~~PPMS~~, LTTS	OFS			TF
27,500 - 29,500	CC ~~PPMS~~			SAT	
31,000 - 31,300	CC ~~PPMS~~, LTTS	OFS	TV BAS	CARS	F/M/TF
38,600 - 40,000	CC ~~PPMS~~	OFS	TV BAS		~~F/M/TF~~

BAS: Broadcast Auxiliary Service – (Part 74)
CARS: Cable Television Relay Service – Part 78)
CC: Common Carrier Fixed Point-to-Point Microwave Service – (Part 101, Subparts C & I)
DBS: Direct Broadcast Satellite – (Part 100)
DEMS: Digital Electronic Message Service – (Part 101, Subpart G)
ET: Emerging Technologies (per ET Dkt. No. 92-9, not yet assigned)
ISM: Industrial, Scientific & Medical – (Part 18)
ITFS: Instructional Television Fixed Service – (Part 74)
LTTS: Local Television Transmission Service – (Part 101, Subpart J)
MAS: Multipoint Address System – (Part 101)
MDS: Multipoint Distribution Service – (Part 21)
OFS: Private Operational Fixed Point-to-Point Microwave Service – (Part 101, Subparts C & H)
PCS: Personal Communications Service – (Part 24)
~~PPMS: Point-to-Point Microwave Service~~
SAT: Fixed Satellite Service – (Part 25)

Notes:

F - Fixed
M - Mobile
TF - Temporary Fixed

*-Applications for frequencies in the 932.5-935/941.5-944 MHz bands may be filed initially during a one-week period to be announced by public notice. After these applications have been processed, the Commission will announce by public notice a filing date for remaining frequencies. From this filing date forward, applications will be processed on a daily first-come, first-served basis.

§101.103 Frequency coordination procedures.

(a) Assignment of frequencies will be made only in such a manner as to facilitate the rendition of communication service on an interference-free basis in each service area. Unless otherwise indicated, each frequency available for use by stations in these services will be assigned exclusively to a single applicant in any service area. All applicants for, and licensees of, stations in these services must cooperate in the selection and use of the frequencies assigned in order to minimize interference and thereby obtain the most effective use of the authorized facilities. In the event harmful interference occurs or appears likely to occur between two or more radio systems and such interference cannot be resolved between the licensees thereof, the Commission may specify a time sharing arrangement for the stations involved or may, after notice and opportunity for hearing, require the licensees to make such changes in operating techniques or equipment as it may deem necessary to avoid such interference.

(b) The provisions of this section do not apply to operations in the band 31.0 to 31.3 GHz. Operations in this band are unprotected and subject to harmful interference from other licensed operations in this band.

(c) Frequency diversity transmission will not be authorized in these services in the absence of a factual showing that the required communications cannot practically be achieved by other means. Where frequency diversity is deemed to be justified on a protection channel basis, it will be limited to one protection channel for the bands 3,700-4,200, 5925-6425, and 6525-6875 MHz, and a ratio of one protection channel for three working channels for the bands 10,550-10,680 and 10,700-11,700 MHz. In the bands 3,700-4,200, 5,925-6,425, and 6525-6875 MHz, no frequency diversity protection channel will be authorized unless there is a minimum of three working channels, except that where a substantial showing is made that a total of three working channels will be required within three years, a protection channel may be authorized simultaneously with the first working channel. A protection channel authorized under such exception will be subject to termination if applications for the third working channel are not filed within three years of the grant date of the applications for the first working channel. Where equipment employing digital modulation techniques with cross-polarized operation on the same frequency is used, the protection channel authorized under the above conditions may be considered to consist of both polarizations of the protection frequency where such is shown to be necessary.

(d) Frequency coordination. ~~When required,~~ For each station authorized under this part, the following frequency usage coordination procedures will apply.

(1) General requirements. Proposed frequency usage must be prior coordinated with existing ~~carriers~~ operators in the area, and other applicants with previously filed applications, whose facilities could affect or be affected by the new proposal in terms of frequency interference on active channels, applied-for channels, or channels coordinated for

future growth. Coordination must be completed prior to filing an application for regular authorization, or an amendment to a pending application, or ~~a~~ any major modification to a license. In coordinating frequency usage with stations in the fixed satellite service, applicants must also comply with the requirements of Sec. 101.21(e) ~~713(c) and (d)~~. In engineering a system or modification thereto, the applicant must, by appropriate studies and analyses, select sites, transmitters, antennas and frequencies that will avoid interference in excess of permissible levels to other users. All applicants and licensees must cooperate fully and make reasonable efforts to resolve technical problems and conflicts that may inhibit the most effective and efficient use of the radio spectrum; however, the party being coordinated with is not obligated to suggest changes or re-engineer a proposal in cases involving conflicts. Applicants should make every reasonable effort to avoid blocking the growth of systems as prior coordinated. The applicant must identify in the application all entities with which the technical proposal was coordinated. In the event that technical problems are not resolved, an explanation must be submitted with the application. Where technical problems are resolved by an agreement or operating arrangement between the parties that would require special procedures be taken to reduce the likelihood of interference in excess of permissible levels (such as the use of artificial site shielding) or would result in a reduction of quality or capacity of either system, the details thereof may be contained in the application.

(2) Coordination procedure guidelines are as follows:

(i) Coordination involves two separate elements: notification and response. Both or either may be oral or in written form. To be acceptable for filing, all applications and major technical amendments must certify that coordination, including response, has been completed. The names of the ~~carriers~~ operators with coordinated proposals, applicants, permittees, and licensees with which coordination was accomplished must be specified. If such notice and/or response is oral, the party providing such notice or response must supply written documentation of the communication upon request.

(ii) Notification must include relevant technical details of the proposal. At minimum, this should include, as applicable, the following:

Applicant's name and address.
Transmitting station name.
Transmitting station coordinates.
Frequencies and polarizations to be added, changed or deleted.
Transmitting equipment type, its stability, actual output power, emission designator, and type of modulation (loading).
Transmitting antenna type(s), model, gain and, if required, a radiation pattern provided or certified by the manufacturer.
Transmitting antenna center line height(s) above ground level and ground elevation above mean sea level.
Receiving station name.
Receiving station coordinates.

Receiving antenna type(s), model, gain, and, if required, a radiation pattern provided or certified by the manufacturer.
Receiving antenna center line height(s) above ground level and ground elevation above mean sea level.
~~Forward and reverse path~~ Path azimuth and distance.
[redacted]

(iii) For transmitters employing digital modulation techniques, the notification should clearly identify the type of modulation. Upon request, additional details of the operating characteristics of the equipment must also be furnished.

(iv) Response to notification should be made as quickly as possible, even if no technical problems are anticipated. Any response to notification indicating potential interference must specify the technical details and must be provided to the applicant, in writing, within the 30-day notification period. Every reasonable effort should be made by all applicants, permittees and licensees to eliminate all problems and conflicts. If no response to notification is received within 30 days, the applicant will be deemed to have made reasonable efforts to coordinate and may file its application without a response.

(v) The 30-day notification period is calculated from the date of receipt by the applicant, permittee, or licensee being notified. If notification is by mail, this date may be ascertained by:

(A) The return receipt on certified mail,
(B) The enclosure of a card to be dated and returned by the recipient, or
(C) A conservative estimate of the time required for the mail to reach its destination.

In the latter case, the estimated date when the 30-day period would expire should be stated in the notification.

(vi) An expedited prior coordination period (less than 30 days) may be requested when deemed necessary by a notifying ~~carrier~~ operator. The coordination notice should be identified as "expedited" and the requested response date should be clearly indicated. However, circumstances preventing a timely response from the receiving ~~carrier~~ operator should be accommodated accordingly. It is the responsibility of the notifying ~~carrier~~ operator to receive written concurrence (or verbal, with written to follow) from affected parties or their coordination representatives.

(vii) All technical problems that come to light during coordination must be resolved unless a statement is included with the application to the effect that the applicant is unable or unwilling to resolve the conflict and briefly the reason therefor.

(viii) Where a number of technical changes become necessary for a system during the course of coordination, an attempt should be made to minimize the number of separate notifications for these changes. Where the changes are incorporated into a completely revised notice, the items that were changed from the previous notice should be identified. When changes are not numerous or complex, the ~~carrier~~ operator receiving the changed notification should make an effort to respond in less than 30 days. When the notifying ~~carrier~~ operator believes a shorter response time is reasonable and appropriate, it may be helpful for that ~~carrier~~ operator to so indicate in the notice and perhaps suggest a response date.

(ix) If, after coordination is successfully completed, it is determined that a subsequent change could have no impact on some ~~carriers~~ operators receiving the original notification, these ~~carriers~~ operators must be notified of the change and of the coordinator's opinion that no response is required.

(x) Applicants, permittees and licensees should supply to all other applicants, permittees and licensees within their areas of operations, the name, address and telephone number of their coordination representatives. Upon request from coordinating applicants, permittees and licensees, data and information concerning existing or proposed facilities and future growth plans in the area of interest should be furnished unless such request is unreasonable or would impose a significant burden in compilation.

(xi) ~~Carriers~~ Operators should keep other ~~carriers~~ operators with whom they are coordinating advised of changes in plans for facilities previously coordinated. If applications have not been filed 6 months after coordination was initiated, ~~carriers~~ operators may assume that such frequency use is no longer desired unless a second notification has been received within 10 days of the end of the 6 month period. Renewal notifications are to be sent to all originally notified parties, even if coordination has not been successfully completed with those parties.

(xii) Any frequency reserved by a licensee for future use in the bands subject to this Part ~~must, upon a showing by~~ must be released for use by another licensee upon a showing by the latter that it requires an additional frequency and cannot coordinate one that is not reserved for future ~~use, file for the frequency within six (6) months after receiving such a showing or release the frequency for use by the requesting licensee.~~ use.

(e) Where frequency conflicts arise between co-pending applications in the Private Operational Fixed Point-to-Point Microwave, Common Carrier Fixed Point-to-Point Microwave ~~Radio~~ and Local Television Transmission Services, it is the obligation of the later filing applicant to amend his application to remove the conflict, unless it can make a showing that the conflict cannot be reasonably eliminated. Where a frequency conflict is not resolved and no showing is submitted as to why the conflict cannot be resolved, the Commission may grant the first filed application and dismiss the later filed application(s) after giving the later filing applicant(s) 30 days to respond to the proposed action.

(f) When the proposed facilities are to be operated in the band 12,500-12,700 MHz, applications must also follow the procedures in ~~§101.713~~ §101.21 of this Part and the technical standards and requirements of Part 25 of this Chapter as regards licensees in the Communication-Satellite Service.

§101.105 Interference protection criteria.

(a) The interference protection criteria for fixed stations subject to this Part are as follows:

(1) To long-haul analog systems, employing frequency modulated radio and frequency division multiplexing to provide multiple voice channels, the allowable interference level per exposure:

(i) Due to co-channel sideband-to-sideband interference must not exceed 5 pwpO (Picowatts of absolute noise power psophometrically weighted (pwpO), appearing in an equivalent voice band channel of 300-3400 Hz).

(ii) Due to co-channel carrier-beat interference must not exceed 50 pwpO.

(2) To short-haul analog systems employing frequency modulated radio and frequency division multiplexing to provide multiple voice channels, the allowable interference level per exposure:

(i) Due to co-channel sideband-to-sideband interference must not exceed 25 pwpO except in the 952-960 MHz band interference into single link fixed relay and control stations must not exceed 250 pwpO per exposure.

(ii) Due to co-channel carrier-beat interference must not exceed 50 pwpO except in the 952-960 MHz band interference into single link fixed relay and control stations must not exceed 1000 pwpO per exposure.

(3) FM-TV. In analog systems employing frequency modulated radio that is modulated by a standard, television (visual) signal, the allowable interference level per exposure may not exceed the levels which would apply to a long-haul or short-haul FM-FDM systems, as outlined in paragraphs (b)(1) and (2) of this section, having a 600-1200 voice channel capacity.

(b) In addition to the requirements of paragraph (a) of this Section the adjacent channel interference protection criteria to be afforded, regardless of system length, or type of modulation, multiplexing, or frequency band, must be such that the interfering signal does not produce more than 1.0 dB degradation of the practical threshold of the protected receiver.

(ii) The "practical threshold" at the protected receiver can be based upon the definition in TSB 10, referenced in paragraph (c) of this section, or upon alternative generally acceptable good engineering standards.

(c) Applying the Criteria.

(1) Guidelines for applying the interference protection criteria for fixed stations subject to this Part are specified in TIA Telecommunications Systems Bulletin TSB 10, "Interference Criteria for Microwave Systems" (TSB 10). Other procedures that follow generally acceptable good engineering practices are also acceptable to the Commission.

(2) If TSB 10 guidelines cannot be used, the following interference protection criteria may be used by calculating the ratio in dB between the desired (carrier signal) and the undesired (interfering) signal (C/I ratio) appearing at the input to the receiver under investigation (victim receiver):

(i) Except as provided in ~~§101.605~~ §101.147 of this Part, where the applicants proposed facilities are of a type not included in paragraphs (a) and (b) of this section or where the development of the carrier-to-interference (C/I) ratio is not covered by generally acceptable procedures, or where the applicant does not wish to develop the carrier-to-interference ratio, the applicant must, in the absence of criteria or a developed C/I ~~ration,~~ ratio, employ the following C/I protection ratios:

Co-channel interference: both sideband and carrier-beat, applicable to all bands; the existing or previously authorized system must be afforded a carrier to interfering signal protection ratio of at least 90 dB except in the 952-960 MHz band where it must be 75 dB.

Adjacent channel interference: applicable to all bands; the existing or previously authorized system must be afforded a carrier to interfering signal protection ratio of at least 56 dB.

(3) Applicants for frequencies listed in Sec. ~~101.605(a)(1)~~ 101.147(b)(1) must make the following showings that protection criteria have been met over the entire service area of existing systems. Such showings may be made by the applicant or may be satisfied by a statement from a Frequency Advisory Committee. For frequencies available to more than one service, the Frequency Advisory Committee must affirmatively show that coordination with similar Committees for the other services has been accomplished.

(i) For multiple address stations in the 928-929/952-960 MHz bands, a statement that the proposed system complies with the following co-channel separations from all existing stations and pending applications:

Fixed-to-fixed	145 km (90 miles)

Fixed-to-mobile 113 km (70 miles)
Mobile-to-mobile 81 km (50 miles)

Multiple address systems employing only remote stations will be treated as mobile for the purposes of determining the appropriate separation. For mobile operation, the mileage is measured from the reference point specified on the license application.

(ii) For multiple address stations in the 932-932.5/941-941.5 MHz bands, a statement that the proposed system complies with the following co-channel separation from all existing stations and pending applications:

Fixed-to-fixed 113 Km (70 miles)

(iii) In cases where the geographic separation standard in paragraphs (c)~~(4)~~ (3)(i) and (c)~~(4)~~ (3)(ii) of this section are not followed, an engineering analysis will be submitted to show the coordination of the proposed assignment with existing systems located closer than those standards. The engineering analyses will include:

(A) Specification of the interference criteria and system parameters used in the interference study.

(B) Nominal service areas of each system included in the interference analysis.

(C) Modified service areas resulting from the proposed system. The propagation models used to establish the service boundary limits must be specified and any special terrain features considered in computing the interference impact should be described.

(D) A statement that all parties affected have agreed to the engineering analysis and will accept the calculated levels of interference.

~~(5)~~ (4) Multiple address frequencies in the 956 MHz band may be assigned for use by mobile master stations on a primary basis. Multiple address frequencies in the 952 MHz band may be assigned for use by mobile master stations on a case-by-case basis. Mobile operation in the 952 MHz band will be on a secondary basis to fixed operations.

~~(6)~~ (5) Each application for new or modified nodal station on channels numbered 4A, 4B, 7, 9, and 19/20 in the 10.6 GHz band and all point-to-multipoint channels in the 18 GHz band must demonstrate that all existing co-channel stations are at least 56 kilometers from the proposed nodal station site. Applicants for these channels must certify that all licensees and applicants for stations on the adjacent channels within 56 kilometers of the proposed nodal station have been notified of the proposed station and do not object. Alternatively, or if one of the affected adjacent channel interests does object, the applicant may show that all affected adjacent channel parties are provided a C/I protection ratio of 0 dB. An applicants proposing to operate at an AAT greater than 91 meters must reduce

its EIRP in accordance with the following table; however, in no case may EIRP exceed 70 dBm on the 10.6 GHz channels.

AAT (meters)	EIRP dBm
Above 300	+38
251 to 300	41
201 to 250	43
151 to 200	49
101 to 150	55
100 and below	85

(~~7~~6) Each application for new or modified nodal station on channels numbered 21, 22, 23, and 24 in the 10.6 GHz band must include an analysis of the potential for harmful interference to all other licensed and previously applied for co-channel and adjacent channel station located within 80 kilometers of the location of the proposed station. The criteria contained in §101.103(d)(~~3~~2) must be used in this analysis. Applicants must certify that copies of this analysis have been served on all parties which might reasonably be expected to receive interference above the levels set out in §101.103(d)(~~3~~2) within 5 days of the date the subject application is filed with the Commission.

~~(7) If the potential interference will exceed the prescribed limits, a statement shall be submitted with the application for new or modified stations to the effect that all parties have agreed to accept the higher level of interference.~~

~~(d) An applicant filing for a modification of an existing station under the provisions of §101.31 need not perform the interference protection analyses required by this section if the only modifications made to the station are one or more of the following:~~

~~(1) Substitution of transmitting equipment having equal or tighter frequency tolerance.~~

~~(2) Any decrease in antenna primary lobe beamwidth which is accompanied by a corresponding decrease in antenna input power so as to not increase the effective radiated power in excess of 3 dB (a 2 to 1 ratio).~~

~~(3) Any decrease in antenna height or transmitter output power.~~

(e~~d~~) Effective August 1, 1985, when a fixed station that conforms to the technical standards of this subpart (or, in the case of the 12,200-12,700 MHz band, a direct broadcast

satellite station) receives or will receive interference in excess of the levels specified in this section as a result of an existing licensee's use of non-conforming equipment authorized between July 20, 1961 and July 1, 1976, and the interference would not result if the interfering station's equipment complied with the current technical standards, the licensee of the non-conforming station must take whatever steps are necessary to correct the situation up to the point of installing equipment which fully conforms to the technical standards of this subpart. In such cases, if the engineering analysis demonstrates that (1) the conforming station would receive interference from a non-conforming station in excess of the levels specified in this section and (2) the interference would be eliminated if the non-conforming equipment were replaced with equipment which complies with the standards of this subpart, the licensee (or prospective licensee) of the station which would receive interference must provide written notice of the potential interference to both the non-conforming licensee and the Commission's office in Gettysburg, PA. The non-conforming licensee must make all required equipment changes within 180 days from the date of official Commission notice informing the licensee that it must upgrade its equipment, unless an alternative solution has been agreed to by all parties involved in the interference situation. If a non-conforming licensee fails to make all required changes within the specified period of time, the Commission may require the licensee to suspend operation until the changes are completed.

(e) Interference Dispute Resolution Procedures.

Should a licensee licensed under this part receive harmful interference from another licensee licensed under this chapter, the parties involved shall comply with the dispute resolution procedures set forth herein:

(i) The licensee experiencing the harmful interference shall notify the licensee believed to be causing the harmful interference and shall supply information describing its problem and supporting its claim.

(ii) Upon receipt of the harmful interference notice, the licensee alleged to be causing the harmful interference shall respond immediately and make every reasonable effort to identify and resolve the conflict.

(iii) Licensees are encouraged to resolve the harmful interference prior to contacting the Commission.

§101.107 Frequency tolerance.

(a) The carrier frequency of each transmitter authorized in these services must be maintained within the following percentage of the reference frequency except as otherwise provided in paragraph (b) of this section or in the applicable subpart of this part (unless otherwise specified in the instrument of station authorization the reference frequency will be deemed to be the assigned frequency):

Frequency (MHz)	FREQUENCY TOLERANCE (PERCENT)		
	All fixed and base stations	Mobile stations over 3 watts	Mobile stations 3 watts or less
928 to 929 (2)(5)	0.0005		
932 to 932.5 (2)	0.00015		
932.5 to 935 (2)	0.00025		
941 to 941.5	0.00015		
941.5 to 944	0.00025		
952 to 960 (7)			
944.0 to 1,000	0.0005	0.0005	0.0005
1,850 to 1,990	0.002		
2,110 to 2,200	0.001		
2,200 TO 12,200 (1)	0.005	0.005	0.005
2,450 to 2,500	0.001		
~~3,700 to 4,200~~	~~0.005~~		
~~6,425~~ ~~3,925~~ to ~~6,875~~ ~~6,525~~	0.005		
10,550 to ~~10,680~~ 11,700	~~0.0003~~ 0.005		
12,200 to 13,150 (6)	0.005		
12,200 to 17,700	0.03	0.03	0.03
17,700 to 18,820 (4)(5)	0.003		
18,820 to 18,920 (4)(5)	0.001		
18,920 to 19,700 (4)(5)	0.003		
19,700 to 40,000 (6)	0.03	0.03	0.03

(1) Applicable only to common carrier LTTS stations. Beginning Aug. 9, 1975, this tolerance will govern the marketing of LTTS equipment and the issuance of all such authorizations for new radio equipment. Until that date new equipment may be authorized with a frequency tolerance of .03 percent in the frequency range 2,200 to 10,500 MHz and .05 percent in the range 10,500 MHz to 12,200 MHz, and equipment so authorized may continue to be used for its life provided that it does not cause interference to the operation of any other licensee.

(2) Equipment authorized to be operated on frequencies between 890 and 940 MHz as of Oct. 15, 1956, must maintain a frequency tolerance within 0.03 percent subject to the condition that no harmful interference is caused to any other radio station.

(3) See Subpart G for the stability requirements for transmitters used in the Digital Electronic Message Service.

(4) Existing type accepted equipment with a frequency tolerance of +/-0.03% may be marketed until December 1, 1988. Equipment installed and operated prior to December 1, 1988 may continue to operate after that date with a minimum frequency tolerance of +/-0.03%. However, the replacement of equipment requires that the +/-0.003% tolerance be met.

(5) For remote stations with 12.5 KHz bandwidth, the tolerance is ±0.00015%.

(6) Applicable to private operational fixed [redacted] only. For exceptions see ~~§101.605~~ §101.147.

(7) For private operational fixed point-to-point [redacted] systems, with a channel greater than or equal to 50 KHz bandwidth, ±0.0005%; for multiple address master stations, regardless of bandwidth, ±0.00015%; for multiple address remote stations with 12.5 KHz bandwidths, ±0.00015%; for multiple address remote stations with channels greater than 12.5 KHz bandwidth, ±0.0005%.

(b) Heterodyne microwave radio systems may be authorized at a somewhat less restrictive frequency tolerance (up to .01 percent) to compensate for frequency shift caused by numerous repeaters between base band signal insertion. Where such relaxation is sought, applicant must provide all calculations and indicate the desired tolerance over each path. In such instances the radio transmitters and receivers used must individually be capable of complying with the tolerance specified in paragraph (a) of this section. Heterodyne operation is restricted to channel bandwidth of 10 MHz or greater.

(c) As an additional requirement in any band where the Commission makes assignments according to a specified channel plan, provisions must be made to prevent the emission included within the occupied bandwidth from radiating outside the assigned channel at a level greater than that specified in §101.111.

§101.109 Bandwidth.

(a) Each authorization issued pursuant to these rules will show, as the emission designator, a symbol representing the class of emission which must be prefixed by a number specifying the necessary bandwidth. This figure does not necessarily indicate the bandwidth actually occupied by the emission at any instant. In those cases where Part 2 of this chapter does not provide a formula for the computation of the necessary bandwidth, the occupied bandwidth may be used in the emission designator.

(b) Stations in this service will be authorized any type of emission, method of modulation, and transmission characteristic, consistent with efficient use of the spectrum and good engineering practice, except that Type B, damped-wave emission will not be authorized.

(c) The maximum bandwidth which will be authorized per frequency assigned is set out in the table that follows. Regardless of the maximum authorized bandwidth specified for each frequency band, the Commission reserves the right to issue a license for less than the maximum bandwidth if it appears that a lesser bandwidth would be sufficient to support an applicant's intended communications.

Frequency Band (MHz)	Maximum Authorized Bandwidth
928 to 929	25 KHz /1/ /6/
932 to 932.5, 941 to 941.5	12.5 KHz /1/
932.5 to 935, 941.5 to 944	200 KHz /1/
952 to 960	200 KHz /1/ /5/
1,850 to 1,990	10 MHz /1/
2,110 to 2,130	3.5 MHz
2,130 to 2,150	800 or 1600 KHz /1/
2,150 to 2,160	10 MHz
2,160 to 2,180	3.5 MHz
2,180 to 2,200	800 or 1600 KHz /1/
2,450 to 2,483.5	625 KHz /2/
2,483.5 to 2,500	800 KHz
3,700 to 4,200	20 MHz
5,925 to 6,425	30 MHz /1/
6,425 to 6,525	25 MHz
6,525 to 6,875	10 MHz /1/
10,550 to 10,680	5 MHz /1/
10,700 to 11,700	40 MHz /1/
12,200 to 12,700	20 MHz /1/
13,200 to 13,250	25 MHz
17,700 to 18,140	220 MHz /1/
18,140 to 18,142	2 MHz
18,142 to 18,580	6 MHz
18,580 to 18,820	20 MHz /1/
18,820 to 18,920	10 MHz
18,920 to 19,160	20 MHz /1/
19,160 to 19,260	10 MHz
19,260 to 19,700	220 MHz /1/
21,200 to 23,600	100 MHz /4/
27,500 to 29,500	220 MHz
31,000 to 31,300	25 or 50 MHz
38,600 to 40,000	50 MHz
Bands above 40,000	/3/

/1/ The maximum bandwidth that will be authorized for each particular frequency in this band is detailed in the appropriate frequency table in §101.147.

/2/ 1250 KHz, 1875 KHz, or 2500 KHz on a case-by-case basis.

/3/ To be specified in authorization.

/4/ For exceptions, see §101.147(r).

/5/ A 12.5 KHz bandwidth applies only to frequencies listed in §101.147(b)(1).

/6/ For frequencies listed in §101.147(b)(2), consideration will be given on a case-by-case basis to authorizing bandwidths up to 50 KHz.